CLAIMS:

1. A method of densifying a bulk particulate material to provide a densified flowable bulk particulate material, the method including

mechanically agitating the bulk particulate material in the presence of an aqueous liquid densification agent; and

allowing the concentration of the aqueous liquid densification agent to reduce during the mechanical agitation of the bulk particulate material by allowing the bulk particulate material to heat up as a result of the mechanical agitation and vaporizing at least a portion of the aqueous liquid densification agent, thereby to provide a flowable bulk particulate material of increased bulk density.

2. The method as claimed in claim 1, in which the bulk particulate material, prior to densifying thereof, includes water as the densification agent in a mass concentration falling in a range with a lower limit of 0.4 % and an upper limit of 20 %.

3. The method as claimed in claim 2, in which the water is present in a range with a lower limit of 0.45 % and an upper limit of 15 %.

4. The method as claimed in any one of the preceding claims, in which the bulk particulate material is microsilica.

5. The method as claimed in any one of claims 1 to 3 inclusive, in which the bulk particulate material is selected from the group consisting of carbon black, fly ash, kaolin, and meta kaolin.

6. The method as claimed in any one of claims 1 to 3 inclusive, in which the bulk particulate material is selected from the group consisting of Mn_2O_3, Mn_3O_4, V_2O_5 and slag.

7. The method as claimed in claim 4, in which the microsilica has a particle size of less than 0.5 µm.

8. The method as claimed in any one of the preceding claims, which includes adding the densification agent to the bulk particulate material, prior to or during mechanical agitation of the bulk particulate material.

9. The method as claimed in any one of the preceding claims, in which mechanically agitating the bulk particulate material in the presence of the densification agent includes at least partially confining the bulk particulate material and rotating a rotatable member submerged under the bulk particulate material about an axis of rotation to cause severe agitation of the material.

10. The method as claimed in any one of the preceding claims, in which mechanically agitating the bulk particulate material in the presence of the densification agent includes severely agitating the bulk particulate material with a rotatable member submerged in the bulk particulate material in a vessel and rotating about an axis of rotation which is upwardly extending, and inhibiting displacement of material downwardly past the rotating member during rotation of the rotatable member whilst allowing free movement of materials in the vessel above the rotating member.

11. The method as claimed in claim 9 or claim 10, in which the bulk particulate material is confined in a vessel having a closed bottom, the rotatable member being located immediately above the bottom of the vessel.

12. The method as claimed in any one of the preceding claims, in which a ratio of the bulk density of the particulate material prior to densifying thereof, to the bulk density of the flowable densified particulate material is at least 2 : 3.

13. The method as claimed in claim 12, in which the ratio of the bulk density of the particulate material prior to densifying thereof, to the bulk density of the flowable densified particulate material is at least 1 : 5.

14. The method as claimed in any one of the preceding claims, in which the bulk particulate material includes water in, or water is being added to the bulk particulate

material to, a concentration of more than 4 % by mass, with the densified bulk particulate material including less than 3 % water by mass.

15. The method as claimed in claim 14, in which the bulk particulate material includes water in, or water is being added to the bulk particulate material to, a concentration of between 4 % and 8 % by mass, with the densified bulk particulate material including less than 1.5 % water by mass.

16. Bulk particulate material densification apparatus for densifying a bulk particulate material to provide a densified flowable bulk particulate material, the apparatus including

a vessel for at least partially confining a body of the bulk particulate material;

a rotatable member which is arranged such that in use it is submerged in the body of bulk particulate material mechanically severely to agitate the bulk particulate material;

a densification agent inlet leading into the vessel;

a densification agent outlet leading from the vessel to remove vaporized densification agent; and

drive means connected to the rotatable member and capable of rotating the rotatable member about said axis of rotation when the rotatable member is submerged in the body of bulk particulate material.

17. Bulk particulate material densification apparatus for densifying a bulk particulate material to provide a densified flowable bulk particulate material, the apparatus including

a vessel for at least partially confining a body of the bulk particulate material;

a rotatable member which is arranged such that in use it is submerged in the body of bulk particulate material mechanically severely to agitate the bulk particulate material;

a densification agent outlet from the vessel to remove a vaporized densification agent from the vessel; and

drive means connected to the rotatable member and capable of rotating the rotatable member about said axis of rotation when the rotatable member is submerged in the body of bulk particulate material.

18. Bulk particulate material densification apparatus as claimed in claim 16 or claim 17, in which the rotatable member defines at least one material contacting surface facing substantially tangentially in the direction of rotation thereby to cause movement of material particles essentially towards or away from the axis of rotation at least on initial contact of the material particles with the material contacting surface.